

WHAT IS CLAIMED IS:

5

1. A drive unit comprising:

a drive shaft;

a drive pulley attached to said drive shaft;

and

10

a drive wire driven by said drive pulley so

as to move a movable body,

wherein said drive pulley is formed by press
working or rolling.

15

2. The drive unit as claimed in claim 1,

wherein said drive pulley comprises a hole through

20 which said drive wire is passed.

25

3. The drive unit as claimed in claim 1,

10072998.021202

wherein said drive pulley comprises an engaging part
that engages and holds said drive wire.

5

4. The drive unit as claimed in claim 3,
wherein said engaging part is a cutout.

10

5. The drive unit as claimed in claim 3,
wherein said engaging part has a drawn shape.

15

6. The drive unit as claimed in claim 1,
20 wherein said drive pulley comprises engaging means
for engaging and holding said drive wire.

25

10072998:021202

7. The drive unit as claimed in claim 6,
wherein said engaging means is a cutout.

5

8. The drive unit as claimed in claim 6,
wherein said engaging means has a drawn shape.

10

9. The drive unit as claimed in claim 1,
wherein said drive pulley is formed so as to be
15 press-fitted to said drive shaft.

20

10. The drive unit as claimed in claim 1,
wherein said drive pulley is attached to said drive
shaft at a position that is adjustable with respect
to said drive shaft in a rotational direction thereof.

25

10072993-064202

11. The drive unit as claimed in claim 1,
wherein said drive pulley comprises at least one
flange.

5

12. The drive unit as claimed in claim 11,
wherein said flange comprises a gap.

10

13. The drive unit as claimed in claim 1,
wherein said drive wire is held by at least one
flange.

20

14. The drive unit as claimed in claim 1,
wherein said drive pulley comprises:

a wire winding part around which said drive
wire is wound; and

25

a groove provided to said wire winding part

10072993-021202

so as to hold said drive wire.

5

15. The drive unit as claimed in claim 1,
wherein said drive pulley is formed of a steel plate.

10

16. The drive unit as claimed in claim 1,
wherein said drive pulley is formed of a thin-plate
material.

15

20

17. A drive unit comprising:
a drive shaft;
a drive pulley formed by press working and
attached to said drive shaft; and
a drive wire driven by said drive pulley so
as to move a movable body,
wherein said drive pulley is formed to be

25

10072998.021202

press-fitted to said drive shaft.

5

18. The drive unit as claimed in claim 17,
wherein said drive pulley is attached to said drive
shaft at a position that is adjustable with respect
to said drive shaft in a rotational direction thereof.

10

15

19. A drive unit comprising:

a drive shaft;

a plurality of drive pulleys formed by press
working and attached to said drive shaft; and

a plurality of drive wires driven by said
drive pulleys so as to move a movable body,

20

wherein said drive pulleys are formed to be
press-fitted to said drive shaft.

25

10072998-021202

20. The drive unit as claimed in claim 19,
wherein said drive pulleys are attached to said drive
shaft at positions that are adjustable with respect
to said drive shaft in a rotational direction thereof.

5

21. The drive unit as claimed in claim 20,
10 wherein directions from which the positions are
adjustable are equal.

15

22. A drive unit comprising:
a drive shaft;
a drive pulley formed by press working and
attached to said drive shaft; and
20 a drive wire driven by said drive pulley so
as to move a movable body,
wherein said drive pulley comprises at least
one flange.

25

10072998-024202

23. The drive unit as claimed in claim 22,
wherein said flange comprises a gap.

5

24. The drive unit as claimed in claim 22,
wherein said drive pulley comprises:

10 a wire winding part around which said drive
wire is wound around; and

a groove provided to said wire winding part
so as to hold said drive wire.

15

25. A method of producing a drive unit
moving a movable body by a drive wire driven by a
drive pulley attached to a drive shaft,

20 wherein the drive pulley is formed by press
working or rolling.

25

10072998.001202

26. The method as claimed in claim 25,
wherein a cylindrical part and a fitting part of the
drive pulley are formed in a single process, the
cylindrical part having the drive wire wound
5 therearound and the fitting part fitted to the drive
shaft.

10

27. The method as claimed in claim 26,
wherein centering is performed on the cylindrical
part and the fitting part of the drive pulley in the
single process.

15

28. The method as claimed in claim 26,
20 wherein the cylindrical part and the fitting part of
the drive pulley is integrally formed of one piece of
sheet metal.

25

10072998.021202

29. The method as claimed in claim 25,
wherein the drive pulley is formed of a steel plate.

5

30. The method as claimed in claim 25,
wherein the drive pulley is formed of a thin-plate
material.

10

31. A running body moving unit moving a
15 running body by a mechanism transmitting a driving
force to the running body through wires wound around
a plurality of drive pulleys attached to a drive
shaft without slack,

wherein the drive shaft is provided with
20 screw holes for fixing the drive pulleys to the drive
shaft;

the drive pulleys are provided with
attachment holes through which fixing screws are
passed to be screwed into the screw holes; and
25 at least one of the attachment holes is

10072998.021202

formed to have an elongation so that a position at which a corresponding one of the drive pulleys is attached to the drive shaft is adjustable with respect to the drive shaft.

5

32. The running body moving unit as claimed in claim 31, wherein the one of the attachment holes has the elongation in a rotational direction of the drive shaft.

15

33. The running body moving unit as claimed in claim 31, wherein the position at which the corresponding one of the drive pulleys is attached to the drive shaft is adjustable in a rotational direction of the drive shaft.

25

10072098.021202

34. The running body moving unit as claimed
in claim 31, wherein one of the attachment holes is a
fixing hole.

5

35. The running body moving unit as claimed
in claim 31, wherein the attachment holes are loose
10 holes.

36. The running body moving unit as claimed
in claim 31, wherein the drive pulleys are formed of
sheet metal by plastic working.
15

20

37. The running body moving unit as claimed
in claim 36, wherein each of the drive pulleys
comprises:

25 a fitting part fitted to the drive shaft;

10072998.021202

and

a cylindrical part around which a
corresponding one of the wires is wound,

wherein said fitting part and said
5 cylindrical part are formed integrally with each
other.

10

38. An image reading apparatus comprising:
an optical system for scanning and reading
an image;

a running body including said optical
15 system; and

a running body moving unit moving said
running body by a mechanism transmitting a driving
force to said running body through wires wound around
a plurality of drive pulleys attached to a drive
20 shaft without slack,

wherein the drive shaft is provided with
screw holes for fixing the drive pulleys to the drive
shaft;

the drive pulleys are provided with
25 attachment holes through which fixing screws are

10072500 012002

passed to be screwed into the screw holes; and

at least one of the attachment holes is
formed to have an elongation so that a position at
which a corresponding one of the drive pulleys is
5 attached to the drive shaft is adjustable with
respect to the drive shaft.

10

39. The image reading apparatus as claimed
in claim 38, wherein the one of the attachment holes
has the elongation in a rotational direction of the
drive shaft.

15

40. The image reading apparatus as claimed
20 in claim 38, wherein the position at which the
corresponding one of the drive pulleys is attached to
the drive shaft is adjustable in a rotational
direction of the drive shaft.

25

10072500-001000

41. The image reading apparatus as claimed in claim 38, wherein one of the attachment holes is a fixing hole.

5

42. The image reading apparatus as claimed in claim 38, wherein the attachment holes are loose holes.

10

43. The image reading apparatus as claimed in claim 38, wherein the drive pulleys are formed of sheet metal by plastic working.

15

20

44. The image reading apparatus as claimed in claim 43, wherein each of the drive pulleys comprises:

25

a fitting part fitted to the drive shaft;

10072098.021202

and

a cylindrical part around which a
corresponding one of the wires is wound,

wherein said fitting part and said
5 cylindrical part are formed integrally with each
other.

10

45. An image reading apparatus comprising:
an optical system for scanning and reading

an image;

a running body including said optical
15 system; and

a drive unit,

the drive unit comprising:

a drive shaft;

a drive pulley attached to said drive
20 shaft; and

a drive wire driven by said drive
pulley so as to move the running body,

wherein said drive pulley is formed by press
working or rolling.

25

10072998.021202

46. The image reading apparatus as claimed in claim 45, wherein said drive pulley comprises a hole through which said drive wire is passed.

5

47. The image reading apparatus as claimed in claim 45, wherein said drive pulley comprises an engaging part that engages and holds said drive wire.

48. The image reading apparatus as claimed in claim 47, wherein said engaging part is a cutout.

20

49. The image reading apparatus as claimed in claim 47, wherein said engaging part has a drawn shape.

25

10072908-024202

50. The image reading apparatus as claimed
in claim 45, wherein said drive pulley comprises
engaging means for engaging and holding said drive
wire.

5

51. The image reading apparatus as claimed
10 in claim 50, wherein said engaging means is a cutout.

52. The image reading apparatus as claimed
15 in claim 50, wherein said engaging means has a drawn
shape.

20

53. The image reading apparatus as claimed
in claim 45, wherein said drive pulley is formed so
as to be press-fitted to said drive shaft.

25

10072098.004200

54. The image reading apparatus as claimed
in claim 45, wherein said drive pulley is attached to
said drive shaft at a position that is adjustable
with respect to said drive shaft in a rotational
5 direction thereof.

10072998.001202
10 55. The image reading apparatus as claimed
in claim 45, wherein said drive pulley comprises at
least one flange.

15

56. The image reading apparatus as claimed
in claim 55, wherein said flange comprises a gap.

20

57. The image reading apparatus as claimed
in claim 45, wherein said drive wire is held by at
25 least one flange.

58. The image reading apparatus as claimed
in claim 45, wherein said drive pulley comprises:

a wire winding part around which said drive
wire is wound around; and

5 a groove provided to said wire winding part
so as to hold said drive wire.

10

59. The image reading apparatus as claimed
in claim 45, wherein said drive pulley is formed of a
steel plate.

15

60. The image reading apparatus as claimed
in claim 45, wherein said drive pulley is formed of a
20 thin-plate material.

25

61. An imaging apparatus comprising:

10072998.021502

an image reading apparatus,
the image reading apparatus comprising:
an optical system for scanning and
reading an image;

5 a running body including said optical
system; and

a running body moving unit moving said
running body by a mechanism transmitting a driving
force to said running body through wires wound around
10 a plurality of drive pulleys attached to a drive
shaft without slack,

wherein the drive shaft is provided with
screw holes for fixing the drive pulleys to the drive
shaft;

15 the drive pulleys are provided with
attachment holes through which fixing screws are
passed to be screwed into the screw holes; and

at least one of the attachment holes is
formed to have an elongation so that a position at
20 which a corresponding one of the drive pulleys is
attached to the drive shaft is adjustable with
respect to the drive shaft.

62. The imaging apparatus as claimed in claim 61, wherein the one of the attachment holes has the elongation in a rotational direction of the drive shaft.

5

63. The imaging apparatus as claimed in claim 61, wherein the position at which the corresponding one of the drive pulleys is attached to the drive shaft is adjustable in a rotational direction of the drive shaft.

15

64. The imaging apparatus as claimed in claim 61, wherein one of the attachment holes is a fixing hole.

20

65. The imaging apparatus as claimed in

25

10072993.021202

claim 61, wherein the attachment holes are loose holes.

5

66. The imaging apparatus as claimed in claim 61, wherein the drive pulleys are formed of sheet metal by plastic working.

10

67. The imaging apparatus as claimed in claim 66, wherein each of the drive pulleys comprises:

a fitting part fitted to the drive shaft;
and

a cylindrical part around which a
20 corresponding one of the wires is wound,
wherein said fitting part and said
cylindrical part are formed integrally with each
other.

25

10072930.00100

68. An imaging apparatus comprising:
an image reading apparatus,
the image reading apparatus comprising:
an optical system for scanning and
5 reading an image;
a running body including said optical
system; and
a drive unit,
the drive unit comprising:
10 a drive shaft;
a drive pulley attached to said
drive shaft; and
a drive wire driven by said drive
pulley so as to move the running body,
15 wherein said drive pulley is formed by press
working or rolling.

20

69. The imaging apparatus as claimed in
claim 68, wherein said drive pulley comprises a hole
through which said drive wire is passed.

25

10072998-0021200

70. The imaging apparatus as claimed in claim 68, wherein said drive pulley comprises an engaging part that engages and holds said drive wire.

5

71. The imaging apparatus as claimed in claim 70, wherein said engaging part is a cutout.

10

72. The imaging apparatus as claimed in claim 70, wherein said engaging part has a drawn shape.

20

73. The imaging apparatus as claimed in claim 68, wherein said drive pulley comprises engaging means for engaging and holding said drive wire.

25

10072998.021202

74. The imaging apparatus as claimed in claim 73, wherein said engaging means is a cutout.

5

75. The imaging apparatus as claimed in claim 73, wherein said engaging means has a drawn shape.

10

76. The imaging apparatus as claimed in claim 68, wherein said drive pulley is formed so as to be fitted to said drive shaft by pressure.

15

20

77. The imaging apparatus as claimed in claim 68, wherein said drive pulley is attached to said drive shaft at a position that is adjustable with respect to said drive shaft in a rotational direction thereof.

25

78. The imaging apparatus as claimed in claim 68, wherein said drive pulley comprises at least one flange.

5

79. The imaging apparatus as claimed in claim 78, wherein said flange comprises a gap.

10

80. The imaging apparatus as claimed in claim 68, wherein said drive wire is held by at least one flange.

15

20

81. The imaging apparatus as claimed in claim 68, wherein said drive pulley comprises:

a wire winding part around which said drive wire is wound around; and

25

a groove provided to said wire winding part

10072008.021200

so as to hold said drive wire.

5

82. The imaging apparatus as claimed in claim 68, wherein said drive pulley is formed of a steel plate.

10

83. The imaging apparatus as claimed in claim 68, wherein said drive pulley is formed of a thin-plate material.

15

10072998.021202